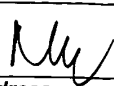# UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/420,912	10/20/1999	JON ALLEN FORD	CASE-1	3426

34847	7590	12/27/2004

AVAYA INC.
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EXAMINER
HECK. MICHAEL C

ART UNIT	PAPER NUMBER
3623	

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

		Application No.	Applicant(s)
Office Action Summary		09/420,912	FORD, JON ALLEN
		Examiner	Art Unit
		Michael C. Heck	3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 August 2004_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-24 and 27-61_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-24 and 27-61_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _20 October 2000_ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _09/07/2004_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This Office Action is responsive to applicant's amendment filed 17 August 2004.

Applicant amended claims 1, 9, 13, 18, 19, 21, 28-36, 44, 48, 54, 55, and 56, and added

new claims 60 and 61. Currently, claims 1-24 and 27-61 are pending.

Response to Arguments

2.   Applicant's arguments with respect to claims 1-24 and 27-59 have been

considered but are moot in view of the new ground(s) of rejection.   Please see the 35

U.S.C. 102(b) and 35 U.S.C. 103(a) rejection below.

Drawings

3.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they include the following reference character(s) not mentioned in the

description: 404 and 504.

4.   The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5)

because they do not include the following reference sign(s) mentioned in the

description: 414 and 514.

5.   Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to

the specification to add the reference character(s) in the description in compliance with

37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the

application. Any amended replacement drawing sheet should include all of the figures

appearing on the immediate prior version of the sheet, even if only one figure is being

amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6.   The disclosure is objected to because of the following informalities:

-    On page 17, line 6, delete "allocation goals vector 208", and insert -- allocation goals vector **206** --.

-    On page 22, line 22, delete "at step 414", and insert -- at step **404** --. Please see the drawing objection above.

-    On page 23, lines 18-19, delete "at step 514", and insert -- at step **504** --. Please see the drawing objection above.

The above citation is a mere guide. Applicant is requested to review the specification thoroughly to eliminate additional errors. Appropriate correction is required.

Claim Objections

7.   Claim 9 is objected to because of the following informalities: does not end in a period. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9.   **Claims 32-35** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: means for determining.... The applicant indicates the apparatus preferable includes an "effector" — any entity that effects the corresponding step, unlike means -- for each method step. Therefore, the applicant has identified the "arrangement" in the preamble of claims 32-35 as an apparatus; however, the "effector" only identifies an entity. Therefore, the apparatus of claims 32-35 is only a list of entities, thus, omitting essential structural cooperative relationships of elements to make an apparatus that performs a function.

Claim Rejections - 35 USC § 101

10.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11.   **Claims 1-24, and 60** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts; and

(2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For the process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts. In the present case, **claims 1, 9, 13, 21, and 60** only recite an abstract idea.

As to **claim 1**, the recited steps of determining available resources that possess skills needed by the work item; for each of the determined resources, determining a business value of having the resource service the work item, the business value being a measure of qualification of the resource for servicing the work item based on skills of the resource and skill requirements of the work item; for each of the determined resources, determining a value to the resource of servicing the work item, the value to the resource being a measure of how serving the work item by the resource helps or hurts goals of the individual resource, wherein the goals of the resource include per-skill time-allocation goals of the resource; and selecting a determined resource that has a best combined value of the business value and the value to the resource, to serve the work item does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a

pencil and paper. The method only constitutes an idea for selecting a resource for a work item, therefore, is deemed to be directed to non-statutory subject matter.

As to **claim 9**, the recited steps of determining available resources that possess skills needed by the work item; for each of the determined resources, determining a business value comprising a sum across all skills of a product of a skill level of the resource in the skill and a skill weight of the work item for the skill; for each of the determined resources, determining a resource treatment value, the resource treatment value being a measure of how the resource is meeting goals of the individual resource, the resource treatment value comprising a sum across all resource treatments of a product of a value of the resource for the resource treatment and a weight of the work item for how much weight said resource treatment has relative to others of the resource treatments and how much weight the resource treatments have relative to the business value; and selecting a determined resource that has a best combined score of its business value and its resource treatment value, to serve the work item does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The method only constitutes an idea for selecting a resource for a work item, therefore, is deemed to be directed to non-statutory subject matter.

As to **claim 13**, the recited steps of determining available work items that need skills possessed by the resource; for each of the determined work items, determining a business value of having the resource service the work item, the business value being a measure of qualification of the resource for servicing of the work item based on skills

of the resource and skill requirements of the work item; for each of the determined work items, determining a value to the work item of being serviced by the resource, the value to the work item being a measure of how the work item is meeting goals of the individual work item, wherein the goals of the work item include how long the work item has been waiting for service, how long the work item may have to wait for service, and how much the work item has exceeded its target wait time; and selecting a determined work item that has a best combined value of the business value and the value to the work item to be served by the resource does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The method only constitutes an idea for selecting a work item for a resource, therefore, is deemed to be directed to non-statutory subject matter.

As to **claim 21** the recited steps of determining available work items that need skills possessed by the resource; for each of the determined work items, determining a business value comprising a sum across all skills of a product of a skill level of the resource in the skill and a skill weight of the work item for the skill; for each of the determined work items, determining a work item treatment value, the work item treatment value being a measure of how the work item is meeting goals of the individual work item, the work item treatment value comprising a sum across all work item treatments of a product of the value of the work item for the work item treatment and a weight of the work item for how much weight said work item treatment has relative to others of the work item treatments and how much weight the work item treatments have

relative to the business value; and selecting a determined work item that has a best

combined score of its business value and work item treatment value, to be served by

the resource does not apply, involve, use, or advance the technological arts since all of

the recited steps can be performed in the mind of the user or by use of a pencil and

paper. The method only constitutes an idea for selecting a work item for a resource,

therefore, is deemed to be directed to non-statutory subject matter.

As to **claim 60** the recited steps of determining available work items that need

skills possessed by the resource; for each of the determined work items, determining a

weighted business value of having the resource service the work item, as a product of

(a) the business value weight corresponding to the work item and (b) a sum of products

of a level of each said needed skill of the resource and a weight of said needed skill of

the work item, the business value being a measure of qualification of the resource for

servicing of the work item based on skills of the resource and skill requirements of the

work item; for each of the determined work items, determining a weighted value to the

work item of being serviced by the resource, as a product of (c) a work item treatment

weight corresponding to the work item and (d) a sum of products of each treatment of

the work item and a weight of said treatment of the work item, the value to the work item

being a measure of how the work item is treated compared to other work items and

treatment goals of the individual work item and comprising a time that the work item has

been waiting for service, a time by which the work item has exceeded its target wait

time, and an estimated time that the work item will have to wait for service comprising a

product of (e) a ratio of a total number of work items waiting for service and an average

number of work items waiting for service and (f) a sum of average wait times of individual said needed skills each weighted by a ratio of the weight of said individual skill and a sum of the weights of the needed skills; and selecting a determined work item that has a best combined value of the weighted business value and the weighted value to the work item to be served by the resource does not apply, involve, use, or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The method only constitutes an idea for selecting a work item for a resource, therefore, is deemed to be directed to non-statutory subject matter.

As to technological arts recited in the preamble, mere recitation in the preamble (i.e., intended or field of use) or mere implications of employing a machine or article of manufacture to perform some or all of the recited steps does not confer statutory subject matter to an otherwise abstract idea unless there is positive recitation in the claim as a whole to breathe life and meaning into the preamble. In the present case, none of the recited steps are directed to anything in the technological arts as explained above. Looking at the claim as a whole, nothing in the body of the claim recites any structure or functionality to suggest that a computer performs the recited steps. Therefore, the preamble is taken to merely recite a field of use.

Additionally, for a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result. In the present case, the claimed invention produces a determined resource (i.e., repeatable) that has a best combined value of the business value and the value to the resource, to serve the work item (i.e.,

useful and tangible); a determined resource (i.e., repeatable) that has a best combined

score of its business value and its resource treatment value, to serve the work item

(i.e., useful and tangible), a determined work item (i.e., repeatable) that has a best

combined value of the business value and the value to the work item to be served by

the resource (i.e., useful and tangible), a determined work item (i.e., repeatable) that

has a best combined score of its business value and work item treatment value, to be

served by the resource (i.e., useful and tangible), and a determined work item (i.e.,

repeatable) that has a best combined value of the weighted business value and the

weighted value to the work item to be served by the resource (i.e., useful and tangible).

Looking at the claims as a whole, nothing in the body of the claims recite any

structure or functionality to suggest that a computer performs a task. Although the

recited process produces a useful, concrete, and tangible result, since the claimed

invention, as a whole, is not within the technological arts as explained above, the same

rejection as stated above for claims 1, 9, 13, 21 and 60 applies to **claims 2-8, 10-12,

14-20, and 22-24**.

Claims 32-35 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter. Claims 32-35 are directed to "an arrangement

for selecting a resource for a work item" and "an arrangement for selecting a work item

for a resource" with "an effector for determining...". In the specification (p.2, lines 4-29,

p.4, lines 28-31) the applicant refers to "arrangement" in a manner to indicate that it is

the solution or solutions that attempt to match work items with resources in such a way

that it brings the most value to all of the stakeholders in the workflow. The applicant identifies under resource surplus conditions, the "arrangement" determines those available resources that possess skills needed by an available work item, and under work-item surplus conditions, the "arrangement" determines those available work items that need skills possessed by an available resource. In other words and as interpreted by the examiner, "arrangement" refers either to a list of resources and their characteristics as they relate to a work-item, or to a list of work-items and their needed skills as they relate to a resource that possesses those skills. The applicant then indicates the "arrangement" may thus be viewed as setting goals for work-item processing and resource treatment and then matching work items to resources in a way that optimizes the workflow to bring the most value to all the stakeholders in the workflow. The applicant indicates the apparatus preferable includes an "effector" – any entity that effects the corresponding step, unlike means -- for each method step. Therefore, the applicant has identified an "arrangement" as both a list and an apparatus. However, when substituting "any entity that effects the corresponding step" in place of "effector" in claims 32-35, the examiner interprets the claims to refer to a list of any entity that can perform the "determining" step. An entity can be a being or thing, such, as a person or a business. Clearly, an entity is not a process, machine, manufacture, or composition of matter. Additionally, a list of items or determined items clearly indicates an abstract idea or the mere manipulation of an abstract idea, therefore, is considered nonstatutory subject matter and not patentable. Also, the list of items or determined

items is considered non-functional descriptive material since the claimed invention is a

compilation or mere arrangement of data as indicated above. See MPEP 2106 IV.B.1.

Claim Rejections - 35 USC § 102

12.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13.   **Claims 1-24 and 27-61** are rejected under 35 U.S.C. 102(b) based upon a public

use or sale of the invention. Business Editors et al. (Business Editors et al., Lucent

Technologies Unveils Breakthrough Call Center Software That Improves Customer

Care, Increases Sales and Reduces Costs, Business Wire, 4 February 1998

[PROQUEST]) teach CentreVu® Advocate and CentreVu® Virtual Routing of Lucent

Technologies, which is an expert system software developed by Bell Laboratories that

uses five predictive algorithms to solve the primary problem all call centers face: How to

simultaneously provide individual customer care faster, leverage agent expertise and

time more effectively, increase revenue, reduce operating expenses, and simplify call

center management. CentreVu® Advocate simultaneously looks at the needs of callers,

their potential business value and desire to wait, analyzes the skill of the agents and

predicts how soon they will likely become available; then decides which agent should be

matched to callers, regardless of their position in the queue. CentrVu® Advocate and

CentreVu® Virtual Routing automatically anticipate, control and optimize the allocation

of call center resources to minimize call wait times; reduce the number of abandoned calls; lower network costs; and balance workloads while matching callers with the agents who can best serve their needs. CentreVu® Advocate makes real-time decisions – the best decisions every time – based on a business's objectives for the various levels of care it wants to give customers, how it wants to optimize agent skills and time, its sales goals, and the expense it is willing to allocate to meet those objectives. Once these objectives are programmed into the software, CentrVu® Advocate will consider all variables – the time a caller will likely wait, the media through which the call has come in (phone, Internet, fax, video, e-mail), when the agent with the best skill set for the customer will become available, tiers of service, call volume, sales goals – to determine the best and fairest use of the agent and the best call to take that will bring the greatest value to the business at that time (Para 2, 3, and 7-9). Business Editors et al. fails to teach all the features of the claimed invention, however, Business Editor et al. teach the basic features of the independent claims, that is, determining available resources (Para 3, Business Editors et al. teach CentreVu® Advocate analyzes the skill of the agents and predicts how soon they will likely become available), determining available work-items (Para 3, Business Editors et al. teach CentreVu® Advocate looks at the needs of the caller), determine a business value of having the resource service the work item (Para 3, Business Editors et al. teach CentreVu® Advocate simultaneously looks at the needs of callers, their potential business value and desire to wait), determining a value to the resource of servicing the work item (Para 9, Business Editors et al. teach CentreVu® Advocate will consider all variables to

determine the best and fairest use of the agent and the best call to take that will bring the greatest value to he business at that time), and selecting a determined resource to serve the work item (Para 3, Business Editors et al. teach CentreVu® Advocate then decides which agents should be matched to the callers, regardless of their position in queue).

14.   An issue of public use or on sale activity has been raised in this application. In order for the examiner to properly consider patentability of the claimed invention under 35 U.S.C. 102(b), additional information regarding this issue is required as follows: The operations manual for CentreVu® Advocate and CentreVu® Virtual Routing, specifically the five predictive algorithms.

Applicant is reminded that failure to fully reply to this requirement for information will result in a holding of abandonment.

Claim Rejections - 35 USC § 102

15.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16.   **Claim 1, 28, 32 and 36** are rejected under 35 U.S.C. 102(b) as being anticipated by Business Editors et al. (Business Editors et al., Lucent Technologies Unveils Breakthrough Call Center Software That Improves Customer Care, Increases Sales and

Reduces Costs, Business Wire, 4 February 1998 [PROQUEST]). Business Editors et

al. disclose an arrangement for resources and work-items selection comprising:

- **[Claim 1]** determining available resources that possess skills needed by the work item (Para 3, Business Editors et al. teach CentreVu® Advocate simultaneously looks at the needs of callers and analyzes the skill of the agents and predicts how soon they will likely become available.);

- for each of the determined resources, determining a business value of having the resource service the work item, the business value being a measure of qualification of the resource for servicing the work item based on skills of the resource and skill requirements of the work item (Para 9, Business Editors et al. teach CentreVu® Advocate will consider all variables --the time a caller will likely wait, the media through which the call has come in (phone, Internet, fax, video, e-mail), when the agent with the best skill set for the customer will become available, tiers of service, call volume, sales goals – to determine the best and fairest use of the agent and the best call to take that will bring the greatest value to the business at that time. The examiner interprets a business value is determined.);

- for each of the determined resources, determining a value to the resource of servicing the work item, the value to the resource being a measure of how serving the work item by the resource helps or hurts goals of the individual resource, wherein the goals of the resource include per-skill time-allocation goals of the resource (Para 3 and 9, Business Editors et al. teach this approach shifts the paradigm of the call center to a model that – for the first time – more fairly balances the workload of the agents will matching them to the best prospects for the business. CentreVu® Advocate will consider all variables --the time a caller will likely wait, the media through which the call has come in (phone, Internet, fax, video, e-mail), when the agent with the best skill set for the customer will become available, tiers of service, call volume, sales goals – to determine the best and fairest use of the agent and the best call to take that will bring the greatest value to the business at that time. The examiner interprets a value is determined.); and

- selecting a determined resource that has a best combined value of the business value and the value to the resource, to serve the work item (Para 3, Business Editors et al. teach CentreVu® Advocate then decides which agents should be matched to the callers, regardless of their position in queue).

Claims 28, 32, and 36 substantially recite the same limitations as that of claim 1 with

the distinction of the recited method being an apparatus, an arrangement, and a

computer readable medium. Hence the same rejection for claim 1 as applied above

applies to claims 28, 32, and 36.

Claim Rejections - 35 USC § 103

17.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-5 and 37-40 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Business Editors et al. (Business Editors et al., Lucent Technologies

Unveils Breakthrough Call Center Software That Improves Customer Care, Increases

Sales and Reduces Costs, Business Wire, 4 February 1998 [PROQUEST]) in view of

Bushey et al. (U.S. Patent 6,389,400). As to claim 2, Business Editors et al. disclose

an arrangement for resources and work-items selection but fails to teach wherein:

determining a business value comprises determining the business value weighted by a

business value weight corresponding to the work item; determining a value to the

resource comprises determining the value to the resource weighted by a resource

value weight corresponding to the work item; and selecting comprises selecting a

determined resource that has a best combined value of the weighted business value

and the weighted value to the resource. Bushey et al. teach the behavioral model of

the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction attribute are assigned a weighting value based on a relative importance of each attribute. The behavioral model of the at least two agents is calculated from a detailed profile of the at least two agents' sales strategies, customer service behaviors, and sales performance. Each sales strategies attribute, customer service behavior attribute, and sales performance attribute is assigned a weighting value based on a relative importance of each attribute. A list of optimal agents is generated based on the match scores of the at least two agents that are above an optimal threshold. The request from the customer is routed to an available agent on the list of optimal agents (col. 2, lines 53-61, col. 3, lines 56-64, and col. 4, lines 11-16). It would have been obvious to one of ordinary skill in the art at the time of the applicant's inventions to include the optimizing calculations of Bushey et al. with the teachings of Business Editors et al. since Business Editors et al. teach CentreVu® Advocate simultaneously looks at the needs of callers, their potential business value and desire to wait; analyzes the skills of the agents and predicts how soon they will likely become available; then decides which agent should be matched to callers, regardless of their position in queue (Para 3). Maximizing call center ROI is a goal of company management. The optimization model of Bushey et al. increases customer satisfaction and improves performance at the call center (Bushey et al.: col. 2, lines 37-43). CentreVu® Advocate and CentreVu® Virtual Routing solve the primary problem all call centers face: How to simultaneously provide

individual customer care faster, leverage agent expertise and time more effectively,

increase revenue, reduce operating expenses, and simplify call center management

(Business Editors et al.: Para 2). Therefore, utilizing the optimization model of Bushey

et al. with CentreVu® Advocate and CentreVu® Virtual Routing of Business Editors et

al. will improve call center ROI.

- **[Claim 3]** determining a business value comprises determining a weighted business value as a product of (a) the business value weight corresponding to the work item and (b) a sum of products of a level of each said needed skill of the resource and a weight of said needed skill of the work item (Bushey et al.: col. 2, lines 53-56, and col. 3, lines 56-59, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction attribute are assigned a weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.); and

- determining a value to the resource comprises determining a weighted resource treatment value as a product of (c) a resource treatment weight corresponding to the work item and (d) a sum of products of each treatment of the resource and a weight of said treatment of the resource (Bushey et al.: col. 2, lines 57-61, and col. 3, lines 60-64, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the at least two agents is calculated from a detailed profile of the at least two agents' sales strategies, customer service behaviors, and sales performance. Each sales strategies attribute, customer service behavior attribute, and sales performance attribute is assigned a weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.).

- **[Claim 4]** the sums of products are scaled sums, and the treatments are scaled treatments (Bushey et al.: col. 11, lines 5-17, Bushey et al. teach the

absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score. The examiner interprets the value of 0-100 to establish the scale.).

- **[Claim 5]** selecting comprises selecting the determined resource that has a highest sum of the weighted business value and the weighted resource treatment value (Bushey et al.: col. 4, lines 26-29, Bushey et al. teach the request from the customer is routed to an available agent with the highest match score when the wait time equals a maximum wait time.).

Claims 37-40 substantially recite the same limitations as that of claims 2-5 with the distinction of the recited method being a computer readable medium. Hence the same rejection for claim 2-5 as applied above applies to claims 37-40.

Claims 6-10, 13-19, 21, 22, 29-31, 33-35, 41-45, 48-54, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Business Editors et al. (Business Editors et al., Lucent Technologies Unveils Breakthrough Call Center Software That Improves Customer Care, Increases Sales and Reduces Costs, Business Wire, 4 February 1998 [PROQUEST]) and Bushey et al. (U.S. Patent 6,389,400) in view of Walker et al. (U.S. Patent 5,963,911). As to claim 6, Business Editors et al. and Bushey et al. disclose an arrangement for resources and work-items selection but fail to teach the resource treatments of a resource comprise a time since the resource became available and a time that the resource has not spent serving work items. Walker et al. teach determining a time at which each job is required to be performed and if the technician is likely to complete the allocated job and arrive at his finish before his end of the day time he will incur idle time or time with "nothing to do" (Walker et al.: col. 1, lines 61-62 and col. 20, lines 47-49). It would have been

obvious to one of ordinary skill in the art to incorporate the time measures of Walker

et al. with the teachings of Business Editors et al. and Bushey et al. since Business

Editors et al. teach balancing the workload of the agents while matching them to the

best prospects for the business (Business Editors et al.: Para 3). Time is money.

CentreVu® Advocate and CentreVu® Virtual Routing solve the primary problem all call

centers face: How to simultaneously provide individual customer care faster, leverage

agent expertise and time more effectively, increase revenue, reduce operating

expenses, and simplify call center management (Business Editors et al.: Para 2).

Optimizing the allocation of resources produces the smallest total projected cost,

therefore, saving both time and money.

- **[Claim 7]** the treatments of the resource further comprise a measure of an effect that serving of the work item would have on a goal of the resource (Business Editors et al.: Para 2, Business Editors et al. teach more CentreVu® Advocate fairly balances the workload of the agents while matching them to the best prospect for the business.).

- **[Claim 8]** the measure of the effect comprises a difference between (a) a distance of an actual allocation of worktime of the resource among skills from a goal allocation of the worktime of the resource among the skills and (b) a distance of an estimated allocation of the worktime of the resource among the skills if the resource serves the work item from the goal allocation (Walker et al.: col. 3, lines 17-20, Walker et al. teach a time-dependent cost function to each job, the fact that the different resources would perform it at different times, and the consequences of this, such as failure to meet an agreed time, can be taken into account. The examiner interprets that an agreed time is an estimate and performing at different times is an actual.).

- **[Claim 9]** determining available resources that possess skills needed by the work item (Para 3, Business Editors et al. teach CentreVu® Advocate simultaneously looks at the needs of callers and analyzes the skill of the agents and predicts how soon they will likely become available.);

- for each of the determined resources, determining a business value comprising a sum across all skills of a product of a skill level of the resource in the skill and a skill weight of the work item for the skill (Bushey et al.: col. 2, lines 57-61, and col. 3, lines 60-64, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the at least two agents is calculated from a detailed profile of the at least two agents' sales strategies, customer service behaviors, and sales performance. Each sales strategies attribute, customer service behavior attribute, and sales performance attribute is assigned a weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.);

- for each of the determined resources, determining a resource treatment value, the resource treatment value being a measure of how the resource is meeting goals of the individual resource, the resource treatment value comprising a sum across all resource treatments of a product of a value of the resource for the resource treatment and a weight of the work item for how much weight said resource treatment has relative to others of the resource treatments and how much weight the resource treatments have relative to the business value (Walker et al.:, col. 2, lines 52-59, and col. 3, line 48-52, Walker et al. teach assigning each job a cost function which is calculated as a function of the time at which the job will be performed and determining, for each possible combination of jobs with resources, the projected cost, dependent on the time at which each resource is forecast to be available and the value of the cost function for the respective job at that time. The performance of the job and the availability of the resource are calculated as time-dependent functions, with a greater weighting being applied to resource-job combinations with a greater likelihood of failing to achieve a target time.); and

- selecting a determined resource that has a best combined score of its business value and its resource treatment value, to serve the work item (Business Editors et al.: Para 3, Business Editors et al. teach CentreVu® Advocate then decides which agents should be matched to the callers, regardless of their position in queue. Walker et al.: col. 7, lines 32-34, Walker et al. teach the method then determines the combination of the technicians and jobs for which the total of the "technician/job cost" values is a minimum.).

- **[Claim 10]** the resource treatments of a resource comprise a time since the resource became available, a time that the resource has spent not serving

work items, and a measure of an effect that serving the work item would have on a goal of the resource (Bushey et al.: col. 14, lines 12-21, Bushey et al. teach customer wait time is based on the level of match between the customer and agent, the agent availability, and the amount of time the customer has been waiting. Factors that are considered at the service center include: (a) customer wait time, (b) match score, and (c) the avoidance of the customer abandoning their call.).

- **[Claim 13]** determining available work items that need skills possessed by the resource (Para 3, Business Editors et al. teach CentreVu® Advocate simultaneously looks at the needs of callers and analyzes the skill of the agents and predicts how soon they will likely become available.);

- for each of the determined work items, determining a business value of having the resource service the work item, the business value being a measure of qualification of the resource for servicing of the work item based on skills of the resource and skill requirements of the work item (Bushey et al.: col. 2, lines 53-56, and col. 3, lines 56-59, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction attribute are assigned a weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.);

- for each of the determined work items, determining a value to the work item of being serviced by the resource, the value to the work item being a measure of how the work item is meeting goals of the individual work item, wherein the goals of the work item include how long the work item has been waiting for service, how long the work item may have to wait for service, and how much the work item has exceeded its target wait time (Walker et al.: col. 6, lines 53-63, Walker et al. teach the method calculates a time dependent "cost function" for each job, This takes into account the penalty for failing to meet an agreed time. The penalty may be a real monetary cost if compensation is payable to a customer for failures to meet a time, or a 'virtual' cost, e.g., damage to the companies reputation. The penalty is a time-dependent property. Bushey et al.: col. 14, lines 12-21, Bushey et al. teach customer wait time is based on the level of match between the customer and agent, the agent availability, and the amount of time the customer has been waiting. Factors that are considered at the

service center include: (a) customer wait time, (b) match score, and (c) the avoidance of the customer abandoning their call.) ; and

- selecting a determined work item that has a best combined value of the business value and the value to the work item to be served by the resource (Walker et al.: col. 2, lines 52-61, Walker et al. teach assigning each job a cost function which is calculated as a function of the time at which the job will be performed, determining, for each possible combination of jobs with resources, the projected cost, dependent on the time at which each resource is forecast to be available and the value of the cost function for the respective job at that time, and determining the combination which produces the smallest total projected cost.).

- **[Claim 14]** determining business value comprises determining the business value weighted by a business value weight corresponding to the work item; determining a value to the work item comprises determining the value to the work item weighted by a work item value weight corresponding to the work item; and selecting comprises selecting a determined work item that has a best combined value of the weighted business value and the weighted value to the work item (Bushey et al.: col. 2, lines 53-61, col. 3, lines 56-64, and col. 4, lines 11-16, Bushey et al. teach the behavioral model of the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction attribute are assigned a weighting value based on a relative importance of each attribute. The behavioral model of the at least two agents is calculated from a detailed profile of the at least two agents' sales strategies, customer service behaviors, and sales performance. Each sales strategies attribute, customer service behavior attribute, and sales performance attribute is assigned a weighting value based on a relative importance of each attribute. A list of optimal agents is generated based on the match scores of the at least two agents that are above an optimal threshold. The request from the customer is routed to an available agent on the list of optimal agents).

- **[Claim 15]** determining a business value comprises determining a weighted business value as a product of (a) the business value weight corresponding to the work item and (b) a sum of products of a level of each said needed skill of the resource and a weight of said needed skill of the work item (Bushey et al.: col. 2, lines 53-56, and col. 3, lines 56-59, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction attribute are assigned a

weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.); and

- determining a value to the work item comprises a determining a weighted work item treatment value as a product of (c) a work item treatment weight corresponding to the work item and (d) a sum of products of each treatment of the work item and a weight of said treatment of the work item (Bushey et al.: col. 2, lines 53-61, col. 3, lines 56-64, and col. 4, lines 11-16, Bushey et al. teach the behavioral model of the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction attribute are assigned a weighting value based on a relative importance of each attribute. The behavioral model of the at least two agents is calculated from a detailed profile of the at least two agents' sales strategies, customer service behaviors, and sales performance. Each sales strategies attribute, customer service behavior attribute, and sales performance attribute is assigned a weighting value based on a relative importance of each attribute. A list of optimal agents is generated based on the match scores of the at least two agents that are above an optimal threshold. The request from the customer is routed to an available agent on the list of optimal agents).

- [Claim 16] the sums of products are scaled sums, and the treatments are scaled treatments (Bushey et al.: col. 11, lines 5-17, Bushey et al. teach the absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score. The examiner interprets the value of 0-100 to establish the scale.).

- [Claim 17] selecting comprises selecting the determined work item that has a highest sum of the weighted business value and the weighted work item treatment value (Bushey et al.: col. 4, lines 26-29, Bushey et al. teach the request from the customer is routed to an available agent with the highest match score when the wait time equals a maximum wait time.).

- [Claim 18] the work item treatments of a work item comprise a time that the work item has been waiting for service and an estimated time that the work item will have to wait for service (Bushey et al.: col. 14, lines 12-21, Bushey et al. teach customer wait time is based on the level of match between the

customer and agent, the agent availability, and the amount of time the customer has been waiting. Factors that are considered at the service center include: (a) customer wait time, (b) match score, and (c) the avoidance of the customer abandoning their call.).

- **[Claim 19]** the work item treatments of a work item further comprise a time by which the work item has exceeded its target wait time (Bushey et al.: col. 4, lines 20-26, Bushey et al. teach additional agents are added to the list of optimal agents the longer the request from the customer remains in the wait queue. The additional agents are added after reducing the optimal threshold.).

- **[Claim 21]** determining available work items that need skills possessed by the resource (Para 3, Business Editors et al. teach CentreVu® Advocate simultaneously looks at the needs of callers and analyzes the skill of the agents and predicts how soon they will likely become available.);

- for each of the determined work items, determining a business value comprising a sum across all skills of a product of a skill level of the resource in the skill and a skill weight of the work item for the skill (Bushey et al.: col. 2, lines 57-61, and col. 3, lines 60-64, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the at least two agents is calculated from a detailed profile of the at least two agents' sales strategies, customer service behaviors, and sales performance. Each sales strategies attribute, customer service behavior attribute, and sales performance attribute is assigned a weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.);

- for each of the determined work items, determining a work item treatment value, the work item treatment value being a measure of how the work item is meeting goals of the individual work item, the work item treatment value comprising a sum across all work item treatments of a product of the value of the work item for the work item treatment and a weight of the work item for how much weight said work item treatment has relative to others of the work item treatments and how much weight the work item treatments have relative to the business value (Bushey et al.: col. 2, lines 53-56, and col. 3, lines 56-59, col. 11, lines 5-17, Bushey et al. teach the behavioral model of the customer is calculated from a detailed profile of the customer's needs, task objective, sales preferences, and expectations for satisfaction. Each task objective attribute and each customer expectations for satisfaction

attribute are assigned a weighting value based on a relative importance of each attribute. The absolute value of the agent attribute subtracted from the customer call attribute value is multiplied by the weighting value associated with that particular attribute. This is performed for all attributes, and then the sum of the resulting values is subtracted from 100 to get the agent match score.); and

- selecting a determined work item that has a best combined score of its business value and work item treatment value, to be served by the resource (Walker et al.: col. 2, lines 52-61, Walker et al. teach assigning each job a cost function which is calculated as a function of the time at which the job will be performed, determining, for each possible combination of jobs with resources, the projected cost, dependent on the time at which each resource is forecast to be available and the value of the cost function for the respective job at that time, and determining the combination which produces the smallest total projected cost.).

- [Claim 22] the work item treatments of a work item comprise a time that the work item has spent waiting to be serviced, an estimated time that the item will spend waiting to be serviced, and a time by which the work item has exceeded its target waiting time (Bushey et al.: col. 14, lines 12-21, Bushey et al. teach customer wait time is based on the level of match between the customer and agent, the agent availability, and the amount of time the customer has been waiting. Factors that are considered at the service center include: (a) customer wait time, (b) match score, and (c) the avoidance of the customer abandoning their call.).

Claims **29-31, 33-35, 41-45, 48-54, 56, and 57** substantially recite the same limitations as that of claims 6-10, 13-19, 21, 22 with the distinction of the recited method being an apparatus, an arrangement, and a computer readable medium. Hence the same rejection for claims 6-10, 13-19, 21, 22 as applied above applies to claims 29-31, 33-35, 41-45, 48-54, 56, and 57.

Allowable Subject Matter

18.   **Claims 11, 12, 20, 23, and 24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome the rejections

under 35 U.S.C. 101 and 35 U.S.C. 102(b), on sale bar, set forth in this Office Action

and to include all of the limitations of the base claim and any intervening claims.

19.   **Claims 46, 47, 58, and 59** would be allowable if rewritten to overcome the

rejection(s) under 35 U.S.C. 101 set forth in this Office action and to include all of the

limitations of the base claim and any intervening claims.

20.   **Claims 27, 60 and 61** would be allowable if rewritten or amended to overcome

the rejection(s) under 35 U.S.C. 101 set forth in this Office action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Heck whose telephone number is (703) 305-8215. The examiner can normally be reached Monday thru Friday between the hours of 8:00am - 4:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq R. Hafiz can be reached on (703) 305-9643. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

Any response to this action should be mailed to:

Director of the United States Patent and Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450
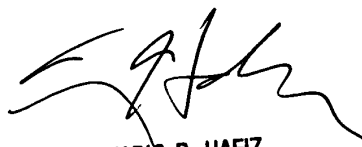
Or faxed to:

(703) 872-9306   [Official communications; including After Final
communications labeled "**Box AF**"]

(703) 746-9419   [Informal/Draft communication, labeled "**PROPOSED**" or
"**DRAFT**"]

Hand delivered responses should be brought to 220 South 20th Street, Crystal Plaza Two, Lobby, Room 1B03, Arlington, Virginia 22202.

mch
15 December 2004

TARIQ R. HAFIZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600